Not to be abstracted

ENTOPATH NEWS

xxxxxxxxxxxxxx

Number 22 July 1959

INTRODUCTION

Entopath has deliberately kept impersonal, but now that I am leaving the Pathological Section in the capable hands of Mr. J.S. Murray, and the editorship of Entopath to him and Dr. Myles Crooke, I would like for once to touch a personal note. This little news sheet has always been particularly dear to me, and the clear evidence we have received that it is read and appreciated has greatly encouraged me. After October, as Chief Research Officer, I shall still hope to provide occasional contributions. I shall certainly continue to encourage, in any way I can, a service which I think has brought you up-to-date and interesting news of two important aspects of research. Thank you all very much for your sustained interest.

We welcome this month two contributions both with a pathological angle, from the Silvicultural Section, one is on elms, the other on Leyland cypress.

T.R. Peace

XMAS COMPETITION RESULTS - AN APOLOGY.

We offer deep apologies to the winners of our Xmas competition that a paragraph giving their names was omitted from the April number. The correct solution was provided by Mr. G. Simpson, Assistant Forester at Rosedale, by Mr. G.D. Rouse, State Forest Officer at Bristol, and by Mr. W.F. Stoddart, Head Forester at Rothbury. Mr. Simpson, with the first of the correct replies received, got the prize. May we offer belated congratulations to these three gentlemen on their knowledge (or could it perhaps be guesswork) of bark beetle tunnelling habits.

COMMONWEALTH MYCOLOGICAL INSTITUTE
27 JUL 1959

DENDROCTONUS MICANS.

We have already commented on the danger which exists of this damaging bark beetle, which is particularly harmful to Sitka spruce, being introduced to this country (see issue No. 10). We now repeat our plea that all foresters should be on the look-out for this insect, details of whose appearance were contained in the issue referred to. If you have any suspicion at all that Dendroctonus may be present in your area, please notify us immediately.

We repeat this request because one of our entomologists recently visited Denmark to become acquainted with this beetle; he was frightened by what he saw there. In Denmark, attacks on Sitka spruce have been severe for just over ten years now and much is known about its importance and activities. It is admitted that Dendroctonus is not a completely primary pest - i.e. it cannot successfully attack a fully vigorous and healthy tree - BUT it can invade and kill trees which are only very slightly and temporarily reduced in health, by some other influence. For example, drought or slight wind rock, either of which would have transitory and unimportant effects, have been shown to provide sufficient tree weakening to allow of beetle invasion and the subsequent loss of the stand. Fomes infestation is also frequently a precursor of beetle attack. The surprising thing about this bark beetle, entering almost fully healthy trees as it does, is that the female can cut her initial gallery even in the face of very abundant resin exudation by the tree. The first gallery, ending in the egg chamber, runs transversely across the stem and during its construction the female beetle is often working in and completely submerged by liquid resin. Furthermore, the initial gallery is longer (up to 8") in more vigorous trees so that this activity further weakens the tree; and it is shorter (usually about 2" only) in trees that are already fairly well weakened and suitable for immediate brood production.

There is no doubt about the damaging potential of this beetle. If it ever arrives in this country, we must try to spot it as soon as possible and get on top of it straightaway.

Lophodermium/

LOPHODERMIUM PINASTRI ON NURSERY PINE.

In late years severe losses in nursery pine stock have been caused by Lophodermium. Infection of the developing needles of the current year normally takes place in the summer months. It is thought that the wet summers of the past few years have greatly encouraged attacks.

In order to obtain information on the distribution of the disease in nurseries a questionnaire was circulated to all nurseries growing pine in NE and NW England. This, together with inspection of some of the nurseries gave rather valuable information. It appeared clear that infection of home grown nursery stock was associated mainly with nurseries in pine woodlands. Severe infection was typically associated with pole sized pine which had been planted right up to the nursery border, and even overhung the beds. There was no infection in nurseries remote from pine plantations, unless infected stock had been brought in from elsewhere.

This accords well with what is known of the disease already. The fungus is restricted to pine so that surroundings of any other conifer cannot bring infection. What little work has been done on spore distribution also suggests that infection falls off rapidly with distance from a spore source. The chief infections are associated with the needle fall, most of the ascospores coming from fallen needles on the ground, very few from needles remaining on the trees. Therefore while an absolute limit of safety cannot be given, infection would probably be very much reduced at a distance of one or two hundred yards from the source. It should be remembered also that the sole method of infection is by the ascospores produced in summer. The Leptostroma stage, mentioned elsewhere in this issue, is not capable of causing infection, so that Lophodermium, unlike Botrytis or Meria, cannot build up in beds or lines in the summer following initial infection. Therefore some infections can be tolerated since their number will remain constant in the first year and the plants if necessary can be culled.

On the basis of these observations it is suggested that Lophodermium attacks could be minimised if nursery pine were grown well away from pine plantations. Surroundings of any other genus are innocuous and possibly beneficial in view of their screening effect on/

on any spores that might drift in. Where there is pine in mixture with the surrounding crop it would be worthwhile cutting it out for at least a hundred yards all round the nursery if it is considered that this will not result in exposure damage to the remaining trees. These will then tend to screen off spores from the nursery.

We would like to express appreciation to all the nursery foresters who dealt so well with the questionnaires and to the field staff who helped in the survey.

LEYLAND CYPRESS.

This interesting hybrid (parentage Monterey and Nootka cypresses) has so far been planted only on a small scale in various species trials and Forest Gardens. But planting sites have included some very tough localities - highish elevations in central Wales, the Lizard peninsula, chalk downland sites etc; and of course some easier sites as well. Two things have impressed us very much in our short experience of the tree; firstly it has shown a remarkably high survival rate on planting, secondly none of the Research plantations has shown any signs of blast, though some of the sites are exposed enough to have troubled very wind-tolerant species.

So far as frost is concerned (winter or spring), the tree could hardly have had a better testing ground than the National Pinetum at Bedgebury. There are numerous specimens planted from 1928 and onwards, and since they have survived sub-zero (F) temperatures (in 1940) and many of the unseasonable frosts for which Bedgebury is notorious, one feels fairly confident on that score.

In fact we had come to think Leyland cypress well nigh indestructible - but quite recently we have had reports that others have not found it so. Sir Edward Salisbury, who lives right on the south coast at * has lost some young trees, almost certainly from the effects of salt spray. In this case it was of interest that Leyland cypress showed much promise as a sea side tree for a few seasons before damage occurred. Much further north at Pitgaveny, Moray, Captain Brander-Dunbar has lost a number of young trees after a single season's (excellent) growth. Here the cause is less

certain/

* Felpham

certain, but damage was noticed after an unusually long cold spell in January 1959. But no exceptionally low temperatures were recorded at stations on the Moray coast - no worse than 12 degrees F. of frost in the "screen", and one finds it difficult to believe that this alone put paid to C. leylandii. We may conclude, however, that Leyland cypress is unfortunately not quite indestructible.

Leyland cypress has been recommended by some authorities as a useful species for hedges and windbreaks particularly in coastal localities. It is doubtful whether in fact much has been planted, though it is beginning to appear in the catalogues. But some people may have come across it, and it would be interesting to hear from anyone who has seen it planted in a particularly exposed place, and how it is behaving.

CONTROL OF THE PINE WEEVIL.

SM 79, dealing with the control of the large pine weevil, Hylobius abietis L., was issued in July 1958 so that last planting season is the first in which weevil control with DDT has been generally recommended. We would be interested, therefore, to have reports from foresters who have used this technique and in particular we would welcome comments on the following points:-

(1) What numbers, ages, and species of plant were treated per gallon of concentrate?

(2) Have any phytotoxic effects on the plants been noticed after treatment?

The second question is posed because we have already received one report, from Hevingham in E(E), to the effect that Corsican pine and Scots pine, dipped and planted in December, have died on a considerable scale. Scots pine, dipped in the same way and planted at the same forest in February, have taken well and show no ill-effects from the treatment. It seems possible that the timing of the treatment may have been responsible for the tree poisoning, and the suggestion has been made that the December planted stock may not have been fully hardened off. Certainly tree death on the scale/

scale reported from Hevingham never occurred in our experimental areas even when much heavier than now recommended dip concentrations were used. We would very much like to obtain a broader view of the picture and your reports from other parts of the country will help us to build this up.

ELMS.

In the issue of April, 1956 we mentioned Dutch work on selecting and breeding elms resistant to Elm Disease and our intention to establish trial plots for testing eleven clones received from Holland. Three trial areas have now been planted and a fourth will be started shortly.

During the early work carried out on Elm disease in this country, Dr. Walter, a visiting American pathologist, selected a number of trees for their apparent disease resistance in the field. Three fast growing clones from these have been included in the trials.

Because of the continuing demand for elm timber by the trade our work on elms is being extended. We are trying to locate promising elms and are particularly interested in large, healthy trees. The wide range of variation of the species and hybrids in this country makes this a difficult task and we would welcome any information about really good trees in your areas.

INSECT CONTROL WITH VIRUS.

Many insects are subject to lethal virus induced diseases. Viruses themselves are sub-microscopic, and can be regarded either as extremely complicated molecules or as the smallest of the living organisms which exist on this earth (see issue No. 18, Virus Diseases of Trees). One of the best known of the insect viruses is that which attacks the caterpillar of the pine sawfly, Neodiprion sertifer, and which occurs naturally in many of the British epidemics of this insect. This particular virus occurs within the caterpillar's body in the form of minute polyhedral crystals which are not themselves the virus particles but which contain the virus. These crystals can be extracted from the body of an affected caterpillar, stored in the

laboratory/

laboratory, and then used in the field to initiate a disease outbreak in the sawfly population.

We have recently used this method, in co-operation with the Virus Research Unit at Cambridge, to control a sawfly epidemic at Ballachulish. Here, some five acres of Scots pine of average height of five feet, had been defoliated by N. sertifer for two years, and the population this spring was large enough to produce further defoliation unless it was controlled. In early May, just as the caterpillars were hatching from the eggs, the trees were sprayed with a suspension of the virus in water. Application was made with a petrol engined portable mist sprayer and the dosage rates used were either 2 gallons per acre of a suspension containing one million polyhedra per cc. or 4 gallons per acre of a suspension containing 500,000 polyhedra per cc. The results of this trial have recently been assessed and it was found that more than 90% of the caterpillars had died before they could cause visible damage to the pines. A few individual trees were missed during the spraying and these were found to be infested with healthy larvae. This was unintentional but nevertheless convenient since it indicates that the virus epidemic is the result of the spraying and not of a natural infection. It is probable also that a sufficient number of caterpillars in the sprayed area received sub-lethal amounts of virus to ensure that the next generation will be affected by the disease.

The Virus Research Unit holds in stock sufficient of the virus to allow of further trials being carried out if suitable sawfly epidemics occur. Any offers?

PERFECT AND IMPERFECT STAGES OF FUNGI.

Since "perfect" and "imperfect" stages in the life histories of fungi are often mentioned, some explanation of the terms may be desirable. Fungi are plants, and like all other plants, are classified into species, genera, etc., mainly on the basis of their reproductive structures. Thus the spore of the fungus is analogous to the seed of the higher plant and the fruit body (fructification, sporophore) which carries the spores is

analogous/

analogous to the seed-bearing structure. The classification therefore depends mainly on features of the fruit body.

As in the higher plants, reproduction is often effected by a sexual process involving the fusion of nuclei from two cells. The resulting spores may be borne in a variety of fruit bodies, depending on the species involved and its place in the classification, but in two great groups, the Basidiomycetes and the Ascomycetes, the spore-bearing structures, derived from such a sexual process, whatever their form, are known as the perfect stage.

Spores may be produced also by an asexual process involving the cutting off of special cells which are capable of germination and reproduction. Here there is no prior fusion of nuclei. The spore-bearing structure so derived in the Ascomycetes, and Basidiomycetes is known as the imperfect stage. The spores of the imperfect stage are usually known as "conidia" and may be borne also in a variety of fruit bodies according to the species concerned.

The larger fungi such as mushrooms, toadstools, brackets, etc., are perfect stages, mainly of Basidiomycetes. Perfect stages of Ascomycetes tend to be smaller, ranging from the morels and truffles through the wellknown fructifications of Nectria and Dasyscypha to microscopic forms. Imperfect stages tend to be small and inconspicuous, some microscopic. Good examples are the "grey mould" of Botrytis and minute fructifications of Meria laricis visible only under the microscope.

Some fungi possess only a perfect stage, some only an imperfect stage. Many species possess both. In early work before the connection was realised, the same fungus was often named twice, once for the imperfect stage and once for the perfect. For example the imperfect stage of Lophodermium pinastri is Leptostroma acicola.

Possession of an imperfect stage by a fungus is usually of great help in diagnosis. Lophodermium cannot be identified by its perfect stage until the summer after infection, but the Leptostroma stage is produced many months earlier and gives a positive identification feature. In the same way, the perfect stage of Fomes

which/

h is the familiar bracket, takes a long time to form and needs ial conditions but the microscopic imperfect stage forms very ily either on infected wood or in culture, and gives a quick nostic feature.

SUMMER FROST.

A correspondent has pointed out that August frost damage to ican pine at Roseisle Forest, Moray, in 1932 was mentioned by fessor Steven in an article in Forestry published in 1934. ently, in the north at any rate, there is no frost-safe month.

ANOTHER SEEDFLY.

Every forester knows the Douglas fir seed fly, Megastigmus rmotrophus, the grub of which hollows out the seed. There are er members of this genus which infest conifer seeds and Forestry mission Leaflet No. 8 gives a list of the seven species that are wn to occur in Britain on Abies, Larix, Picea, and Pseudotsuga. s leaflet, which was written by Dr. Hussey, the acknowledged hority on this group of insects, prophesies that other cies of Megastigmus may, at some time or other, be introduced o our fauna, on imported seed. This was recently proved to re been a good piece of second sight when a 20 lb. consignment Cryptomeria japonica from Japan was found to be infested by one these seed flies. Dr. Hussey was consulted and he has identified e species as Megastigmus cryptomeriae, one hitherto not recorded Britain.

This consignment of seed has been destroyed so that, although is seed fly has been imported, we trust that it has not become tablished as a member of our fauna.

NEW DISEASES ?

The use of Latin terms for diseases occasionally leads to using errors. Wounds, dieback or dead patches on roots can be ferred to as 'root necrosis', but 'root neurosis' won't do; thank/

thank goodness trees have not got nerves. They haven't got minds either, so we cannot accept 'psychological drought', in place of 'physiological drought', a term sometimes used to describe damage due to excessive water loss from the crown. This is, we suspect, the basis of Top-dying of Norway spruce.

REMINDER !!!

Specimens and Descriptions to be sent direct to either the Pathologist or the Entomologist, the minute preferably being in the package with the material.

A copy of the minute and all subsequent correspondence to go via your Conservator.

Pathologist	:	FOREST RESEARCH STATION
	:	ALICE HOLT LODGE
Entomologist	:	WRECCLESHAM
	:	FARNHAM, SURREY

There is no excuse for material arriving dry, now that polythene bags are readily available. Please send all plant material, except very large specimens, in such bags. If the material includes insects or anything that can be crushed, please put the polythene bag into a box to protect it.